

Internalizing and Externalizing Personality Dimensions and Clinical Problems in Adolescents

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Abstract Ostensible psychiatric comorbidity can sometimes be explained by shared relations between diagnostic constructs and higher order internalizing and externalizing dimensions. However, this possibility has not been explored with regard to comorbidity between personality pathology and other clinical constructs in adolescents. In this study, personality pattern scales from the Millon Adolescent Clinical Inventory in a sample of 492 adolescent inpatients were subjected to a principal components analysis to yield oblique internalizing and externalizing dimensions. Relations between personality dimensions and well-established measures of psychopathology (depression, alcohol abuse, drug abuse) and other indicators of clinical dysfunction (self-esteem, suicidality, violence) were assessed before and after controlling for these higher-order personality dimensions. Associations between personality scales and indicators of psychopathology and clinical dysfunction were minimal with these higher order components controlled. These results suggest that internalizing and externalizing personality dimensions explain most of the associations between personality patterns and indicators of psychopathology and clinical dysfunction in adolescent patients.

Keywords Personality · Internalizing · Externalizing · Adolescent psychopathology

Introduction

The diagnosis of adolescent psychopathology is complicated by extensive diagnostic overlap among psychiatric disorders. The internalizing and externalizing framework has a long and fruitful legacy in child and adolescent psychiatry and psychology [1], and recently it has been shown that it can account for covariance among certain classes of disorders in

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adults as well [2]. Among adolescents, internalizing disorders include anxiety and unipolar mood disorder, whereas externalizing disorders include those related to conduct disorder, oppositional defiance, attention problems, and substance abuse. Some have suggested that covariance of diagnoses within each of these classes of psychopathology should be thought of as reflecting a shared influence of higher order, largely genetically influenced personality diatheses [3].

One potential implication of this view is that diagnostically problematic comorbidities could be more easily conceptualized. For instance, rather than regarding a patient as having depression and several distinct anxiety disorders, clinicians could note an elevated internalizing propensity that is likely to lead to multiple problems with anxiety and negative mood. A statistical implication of this view is that, if internalizing and externalizing dimensions were controlled, associations between psychiatric conditions would be less common [4]. Furthermore, any meaningful associations that remained with these dimensions controlled would suggest elements of certain disorders that are distinctly related, above and beyond their shared associations with a general propensity for a broad class of disorders.

Recent research with adults suggests that personality disorders can also be placed in an internalizing/externalizing framework [5–7]. Indeed, this work appears well-suited to this class of disorders given extensive comorbidity among personality disorders [8] and between personality disorders and other psychiatric and substance use disorders in both adults [9] and adolescents [10]. As such, the internalizing and externalizing structure would appear to represent a potentially viable candidate framework for understanding this extensive diagnostic overlap. Thus, far, the two main findings from adult samples regarding internalizing, externalizing, and personality disorders include that antisocial personality disorder reliably relates to the propensity for externalizing [2] and that borderline personality features appear to relate to both internalizing and externalizing dimensions [9, 11]. This latter finding has also been reported for adolescents [10]. Examinations of potential relations of other personality pathology indicators to internalizing and externalizing dimensions and tests of the hypothesis that the internalizing and externalizing structure may help explain apparent comorbidities between personality pathology constructs and other syndromes have been limited.

It is somewhat surprising that, although internalizing and externalizing dimensions were initially developed to describe child and adolescent psychopathology [1], most research that conceptualizes these dimensions as explaining diagnostic comorbidity from a personality perspective has occurred in adults [2, 3]. Limited research among adolescents may reflect controversies regarding the diagnosis of personality pathology in adolescents. Although research has found that personality disorders occur frequently and can be reliably diagnosed in adolescents [12], research suggesting that personality does not typically coalesce before adulthood [13] coupled with concerns about stigma and other long-term impacts of personality-related diagnoses has contributed to clinician reticence to diagnose adolescents with personality disorders. However, recent research suggests that personality disorders are valid clinical markers in adolescents [14], although personality disorders manifest even worse comorbidity problems in this group than they do in adults [8, 15]. Given that extensive criterion and diagnostic comorbidity may reflect the still developing nature of personality in adolescents and the additional complexity this could create for personality disorder diagnosis, it is reasonable to anticipate that a general and inclusive model such as one composed of internalizing and externalizing dimensions may help explain personality comorbidity in younger people, as well as associations between specific personality features and clinical syndromes.

These general expectations guided the current study, in which two specific hypotheses were tested. First, we hypothesized that internalizing and externalizing personality dimensions could explain much of the covariation in personality pathology scales in adolescent psychiatric patients. In particular, we expected that personality pathology involving anxiety (e.g., avoidant, dependent, self-defeating, and obsessive-compulsive PDs), or difficulties with mood regulation (e.g., borderline, narcissistic, histrionic PDs) would comprise an internalizing dimension and personality pathology involving dysregulated or socially maladaptive behavior (e.g., antisocial, sadistic, passive-aggressive, paranoid, and schizotypal PDs) would comprise an externalizing dimension. Second, we hypothesized that these dimensions would also explain comorbidity between personality and psychopathology and clinical dysfunction, such that associations between personality dimensions and indicators of psychopathology and clinical dysfunction would be substantially limited with these dimensions statistically controlled.

Method

Participants were 492 adolescents (ages 13–19, mean = 15.86, SD = 1.46) admitted to the adolescent treatment unit of a private, not-for-profit, psychiatric teaching hospital. Three hundred ninety (79.3%) were Caucasian, 49 (10.0%) were Hispanic, 49 (10.0%) were African-American, and 4 (.8%) reported other ethnicities; 206 (41.9%) were boys and 286 (58.1%) were girls. Participants were admitted due to their need for inpatient-level psychiatric intervention, and no other selection processes were used. Participants were hospitalized for a variety of serious psychiatric problems. All participants were initially assessed with respect to their appropriateness for participating in the assessment protocols, and very few were excluded. Exclusions were due to difficulty with reading or language comprehension, active psychosis, refusal, agitation or confusion. IRB approval was obtained for chart review of the psychological assessments. At the time of admission, and after complete explanation of the assessment procedures, written informed consent was obtained from all participants. For minors, assent was obtained from participants and consent was obtained from their parents or guardians.

Assessments were conducted as part of an overall evaluation procedure, completed within 1–4 days after admission. For this study, we chose specific measures from the assessment battery that would evaluate personality pathology and several common clinical problems of psychopathology and clinical dysfunction in adolescents that have been empirically and conceptually linked to internalizing and externalizing dimensions.

The *Millon Adolescent Clinical Inventory* (MACI) [16] consists of 160 true–false items and was developed and normed in clinical samples. The MACI has 27 clinical scales that tap clinical syndromes, expressed concerns, and personality styles and contains validity checks, which all participants included in the current study passed. This widely used assessment instrument [17, 18], has demonstrated acceptable internal consistency, test–retest reliability, and has been validated against various measures by several different research groups [17, 19, 20]. In the present study, the 12 MACI personality pattern scales that correspond somewhat to the DSM-IV personality disorders: Introversive (similar to schizoid), Inhibited (avoidant), Doleful (depressive), Submissive (dependent), Dramatizing (histrionic), Egotistic (narcissistic), Unruly (antisocial), Forceful (sadistic), Conforming (obsessive-compulsive), Oppositional (passive-aggressive), Self-Demeaning (self-defeating), and Borderline. These scales were used for the depiction of personality pathology. These scales are thought to loosely correspond to DSM personality disorders (e.g.,

dramatizing corresponds to histrionic personality disorder and egotistic corresponds to narcissistic personality disorder) [16].

Three diagnostic variables, depression, alcohol abuse, and drug abuse, were used to test the hypothesis that diagnostic comorbidity would be limited with internalizing and externalizing dimensions controlled. These variables were chosen for their relatively high prevalence in clinical samples and because they reflect diagnoses associated primarily with internalizing (depression) and externalizing (substance abuse) dimensions. The *Beck Depression Inventory* (BDI) [21] is a well-established inventory of the symptoms of depression, one of the constructs thought to reflect a propensity for internalizing [2]. The BDI taps a broad range of negative affects, not just depressive affect, and has been shown to be an efficient marker for broad internalizing psychopathology [22, 23]. The BDI has been utilized extensively within adolescent populations, and has had excellent psychometric properties in adolescent patients, including good internal consistency and test–retest reliability [24]. Two other measures were administered to reflect clinical consequences of externalizing behavior. The *Adolescent Alcohol Involvement Scale* (AAIS) [25] is a 14-item screening measure of alcohol abuse among adolescents. It has demonstrated acceptable psychometric properties including excellent internal consistency and test–retest reliability in clinical and community samples of adolescents [26]. The *Drug Abuse Screening Test for Adolescents* (DAST-A) [27] is a 27-item screening measure for drug abuse, adapted from the adult version [28] for use in adolescent populations. It has demonstrated good psychometric properties including good internal consistency, high test–retest reliability, and good concurrent validity in adolescent inpatient samples [27].

Three constructs were assessed that represent important, non-diagnostic clinical issues, given that overlap between personality and certain clinical features may also be best explained by higher-order internalizing and externalizing dimensions. The *Rosenberg Self-Esteem Scale* (RSE) [29] is a 10-item measure of global self-esteem. A higher total score reflects greater self-esteem. Studies in adolescents have demonstrated excellent reliability and validity [30, 31]. The *Suicide Risk Scale* (SRS) [31] was given to assess another serious clinical consequence of internalizing disorders [32]. The SRS is a 15-item measure of present suicidal impulses, past suicidal behavior, and other items that have been shown to be associated with suicide risk. It has demonstrated good psychometric properties in adults and adolescents—including discrimination, in both age groups, between patients who have and who have not made suicide attempts [33]. The *Past Feelings and Acts of Violence Scale* (PFAV) [31] is a 12-item scale that inquires about acts of violence against others, use of weapons, arrests, and loss of temper. It has been shown to have good psychometric properties in adults and adolescents, and to discriminate between violent and non-violent adolescent inpatients [33, 34].

Analyses

Data analyses occurred in two steps following study hypotheses. First, to test the hypothesis that covariance among personality pathology indicators could be explained by internalizing and externalizing dimensions, a principal components analysis (PCA) was conducted on standardized MACI personality pattern scales. It was anticipated that the first two factors would reflect internalizing and externalizing. Given that these dimensions are thought to correlate, components were rotated obliquely (oblimin). Multiple extraction criteria were used to assess appropriate component extraction.

Second, to test the hypothesis that internalizing and externalizing components could explain covariance between personality pathology and other clinical indicators, personality

pattern scales were correlated with two sets of validating variables with and without the higher order internalizing and externalizing components derived from the PCA controlled. The first set of validating variables were diagnostic constructs related to internalizing and externalizing dimensions, namely depression, alcohol and drug abuse. The second set of validating variables involved features that are often important for clinicians to assess among inpatients but are not fully covered by diagnoses, including self-esteem, suicidality, and violence. Given the number of statistical tests conducted, a conservative Type I error rate of .01 was employed and interpretation generally focused on effect sizes.

Results

Table 1 shows the results of the PCA.¹ The scree test, Kaiser's rule, parallel analysis, and minimum average partial analyses all strongly indicated the extraction of two components, which together explained 77.6% of the covariance in these scales. Eigenvalues for these components were >3.50 whereas the eigenvalue for the third component was .76. The pattern of structure coefficients is mostly consistent with our hypothesis that these components would reflect internalizing and externalizing: the strongest coefficients for the internalizing component were on the self-defeating, inhibited, introversive, and doleful scales whereas the strongest coefficients for the externalizing component were on the unruly, forceful, and oppositional scales. Consistent with previous research, borderline pathology was positively related to both of these dimensions. Some findings were unexpected and suggest the need for further investigation. For instance, the oppositional and conforming scales were related to both internalizing and externalizing components, and submissiveness was related primarily to the externalizing component. The correlation between component scores was .07. No gender or ethnic differences were observed for these component scores; age was negatively related to externalizing ($r = -.24, p < .001$).

Table 2 shows the correlations of MACI personality pattern scales with depression, alcohol abuse, and drug abuse before and after higher order components were controlled. Ten scales (all but unruly and forceful) had significant correlations with depression, and many of these correlations were moderate to strong (i.e., $>.30$). Consistent with the study hypothesis, only one of the partial correlations was significant (inhibited) with internalizing and externalizing components controlled. Furthermore, the direction of this correlation was reversed, suggesting that controlling internalizing and externalizing components changed a moderately strong positive correlation between inhibited personality features and depression to a weak, negative one.

All but the dramatic and egocentric scales were significantly related to alcohol use, although the magnitudes of these correlations were all $<|.30|$. For drug use, eight personality scales showed significant correlations, but only one was $>.30$ (unruly). Across both alcohol and drug use indicators, all partial correlations were quite weak and only three suggested that personality scales continued to significantly indicate substance use in the same direction with internalizing and externalizing components controlled (introversive and self-defeating for alcohol use, unruly for drug use). Most other previously significant coefficients became non-significant (5 scales for alcohol and 6 for drug use), some others reversed direction (e.g., forceful personality and alcohol use) and some showed significant

¹ Very similar results were observed with a principal axis factor analysis. These results are available from the corresponding author upon request.

Table 1 Oblique component structure coefficients of MACI personality pattern scales

	Internalizing	Externalizing
Introversive	.84	−.17
Inhibited	.77	−.42
Doleful	.83	.23
Submissive	−.06	−.89
Dramatic	−.88	.07
Egocentric	−.91	−.06
Unruly	−.29	.85
Forceful	−.08	.87
Conforming	−.56	−.78
Oppositional	.55	.73
Self-Defeating	.81	.24
Borderline	.66	.53
Eigenvalue	5.50	3.82
Variance Explained	45.80%	31.80%

Pattern coefficients were very similar to structure coefficients (both correlations >.99)

Table 2 Correlations of MACI personality pattern scales with mood and substance diagnoses before and after controlling for internalizing and externalizing components

	Depression		Alcohol Abuse		Drug Abuse	
	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
Introversive	.49*	−.04	−.14*	−.23*	−.06	−.07
Inhibited	.37*	−.15*	−.15*	−.09	−.10	.04
Doleful	.60*	.02	.13*	.09	.14*	.05
Submissive	−.21*	−.01	−.20*	.15*	−.27*	.09
Dramatic	−.53*	.08	.08	.17*	.04	.11
Egocentric	−.63*	−.10	−.09	−.14*	−.06	.00
Unruly	−.06	−.12	.29*	.10	.34*	.17*
Forceful	.08	−.09	.16*	−.20*	.23*	−.14*
Conforming	−.54*	−.11	−.24*	.00	−.30*	−.04
Oppositional	.51*	.01	.23*	.00	.25*	−.05
Self-Defeating	.58*	.02	.16*	.15*	.13*	.04
Borderline	.53*	−.01	.23*	.10	.25*	.10

|*r*| indicates that internalizing and externalizing components were statistically controlled

* $p < .01$

partial correlations despite non-significant bivariate correlations (e.g., dramatic personality and alcohol use).

Table 3 shows bivariate and partial correlations between personality pattern scales and self-esteem, suicidality, and violence. Ten scales (all but unruly and forceful) showed significant bivariate correlations with self-esteem. However, only four remained significant with internalizing and externalizing components controlled. Again, each of these was weak and only one of these was in the same direction as the bivariate association: the correlation between the egocentric scale and self-esteem diminished from .71 to .20 with higher-order dimensions controlled. For introversive and inhibited scales, the partial correlations were

Table 3 Correlations of MACI personality pattern scales with clinical constructs before and after controlling for internalizing and externalizing components

	Self-esteem		Suicidality		Violence	
	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
Introversive	-.52*	.13*	.43*	-.14*	.04	.10
Inhibited	-.45*	.14*	.35*	-.12*	-.14*	.01
Doleful	-.61*	.06	.62*	.11	.20*	-.09
Submissive	.18*	-.02	-.24*	.07	-.54*	-.07
Dramatic	.61*	-.07	-.49*	.16*	-.12	-.13*
Egocentric	.71*	.20*	-.58*	.02	-.19*	-.13*
Unruly	.11	.09	.00	-.12*	.44*	-.04
Forceful	-.03	.12*	.12	-.13*	.56*	.18*
Conforming	.55*	.11	-.54*	.01	-.51*	.01
Oppositional	-.52*	-.04	.55*	.07	.48*	-.02
Self-Defeating	-.64*	-.08	.61*	.11	.20*	-.10
Borderline	-.55*	.00	.59*	.11	.32*	-.15*

|*r*| indicates that internalizing and externalizing components were statistically controlled

* $p < .01$

positive and weak whereas the bivariate correlations were negative and moderately strong. For the forceful scale, a weak positive partial correlation emerged from a non-significant bivariate relation.

The same ten scales that were associated with self-esteem (i.e., all but unruly and forceful) also showed significant bivariate associations with suicidality, although all coefficients were in the opposite direction as would be expected given that self-esteem and suicidality are strongly negatively correlated. Unlike with self-esteem, no correlation remained significant and in the same direction with internalizing and externalizing components controlled. Previously positive coefficients for introversive and inhibited scales became weak and negative, the previously negative coefficient for the dramatic scale became weak and positive, and previously non-significant correlations for the unruly and forceful scales became significant and negative.

Ten scales also had significant bivariate correlations with violence (all but introversive and dramatic). However, only four partial coefficients were statistically significant and, again, all were quite weak. Of these, two suggested that internalizing and externalizing dimensions did not fully account for the bivariate association: the correlations between the egocentricity and forceful scales with violence were weaker but remained significant and in the same direction. By contrast, the correlations between violence and borderline and dramatic scales switched directions with internalizing and externalizing components controlled.

Discussion

This study sought to answer two questions about adolescent personality and psychopathology. First, could adolescent personality pathology constructs be more parsimoniously conceptualized as reflecting predispositions for internalizing or externalizing behavior? Second, do relations between personality pathology indicators and other clinical problems

(psychopathology and clinical dysfunction) persist with internalizing and externalizing dimensions controlled? Overall, evidence supported that adolescent personality pathology as represented by the MACI could be re-conceptualized in terms of an internalizing/externalizing structure with little loss of information and that these higher-order dimensions explained most of the ostensible comorbidity between personality pathology and other clinical indicators.

These results carry a number of important clinical implications for adolescent assessment. First, although results support the validity of personality pathology variables in this group, they suggest that this pathology may be parsimoniously represented by two general factors that are familiar to clinicians who work with adolescents: internalizing and externalizing. The possibility that diagnostic comorbidity between personality disorders and clinical syndromes in adolescents may be explained by internalizing or externalizing diatheses should be routinely considered. For instance, if an adolescent appeared to have significant clinical features of multiple forms of internalizing personality pathology (e.g., inhibitedness, introversiveness, and dolefulness) and internalizing clinical syndromes (e.g., depression and anxiety disorders) it may be simpler yet equally informative for clinicians to note a broad internalizing propensity rather than listing multiple potential diagnoses. In this case, diagnoses that are not explained by such a broad propensity (e.g., substance abuse in the pattern described above) can be highlighted, given that such diagnoses are likely to underscore important clinical issues not fully explained by the higher order dimensions (internalizing in this case). Conceptualizing personality pathology at the level of broad dimensions rather than specific syndromes that covary strongly has the potential to economize clinical communication and facilitate treatment planning by encouraging clinicians to isolate factors that are most likely to be most influential on issues such as disorder course or comorbidity patterns. Data suggest that this logic also extends to important clinical features that are not diagnostic but may nevertheless relate to internalizing and externalizing dimensions, such as self-esteem, suicidality, and propensity for violence.

That said, some bivariate associations held even after controlling for internalizing and externalizing components for a few, select variables. For instance, unruly personality features correlated with drug abuse and remained related when higher-order dimensions were controlled. This finding suggests that internalizing and externalizing dimensions did not fully explain all associations between unruliness and drug abuse. However, these partial coefficients tended to be quite small (mean = 1.181), suggesting fairly limited yield of considering all 12 MACI personality scales independent of internalizing and externalizing components. Further, this pattern only occurred in 6 of 58 (10%) significant bivariate coefficients, suggesting that significant partial coefficients may have been observed due to chance. Thus, these findings should be explored in future research. Such research would benefit from a broad conceptualization of the higher order structure of psychopathology, as this would promote consideration of any forms of pathology that provide incremental clinical information above and beyond broad factors such as internalizing and externalizing.

For other statistically significant partial coefficients, the interpretation is less clear. Several (10 of 58, 17%) coefficients were significant but in the opposite direction as the significant bivariate associations. For instance, being inhibited was positively related to depression, but negatively related once internalizing and externalizing components were controlled. This suggests that whatever elements of inhibitedness are independent of internalizing and externalizing dimensions are protective factors against depression, even though overall being inhibited increases risk for depression. It would be useful to develop a better understanding of what such elements might be in future research, but the clinical

implications of these findings are, at this point, somewhat ambiguous, particularly given the small magnitude of the partial correlations in these cases (mean = 1.151). For 6 of 14 (43%) non-significant bivariate coefficients, partial correlations were significant with higher order component scores covaried, a statistical pattern often described as suppression. This suggests, similar to the cases where the sign of coefficients switched, that personality pattern scales have different relationships with validators when internalizing and externalizing dimensions are removed. Again, future research should explore the implications of these findings for clinical practice, which may be modest given the small partial effects (mean = 1.141).

These findings may suggest the need to revisit hierarchical approaches to classifying some forms of adolescent psychopathology. Although hierarchical frameworks were more common in earlier versions of the DSM, they tended to be eliminated over time, primarily for lack of empirical support [35]. However, the internalizing and externalizing model may be more effective for mapping diagnostic hierarchies than previous conceptualizations. Furthermore, developmental differences between adults and adolescents may suggest that this approach could be particularly relevant for younger patients. For instance, the current results strongly suggest that considering multiple forms of internalizing personality pathology as diagnostically separate, when each are present, is unnecessarily cumbersome and would provide limited information beyond noting a general propensity for internalizing.

Several study limitations suggest the need for further research. Our study relied on self-report measures and these may be susceptible to various biases. However, it is also possible that self-report may facilitate disclosure about sensitive material by adolescents. The internalizing and externalizing dimensions from this study were derived from the same measure as the personality pathology scales, so that the limited increment of the latter scales were partly a function of measurement overlap. Although this permits the analyses of higher order dimensions that fully control for the covariation of the personality pattern scales, a more conservative approach would involve tests of the incremental validity of pathology scales over internalizing and externalizing dimensions from other measures. Such research would provide a valuable complement to the current findings. Our study group was a series of psychiatrically hospitalized adolescents. This inpatient group represents a severely ill population with significant comorbidities and our results may not generalize to outpatient or to community samples. Future research should ascertain other adolescent samples using multi-modal measurement methods. This is particularly the case since the clarity evident in the PCA of the MACI may be due, in part, to characteristics specific to that instrument (e.g., item overlap across scales) or Millon's model of personality, and other, potentially more complex personality structures may emerge with other measures of adolescent personality pathology. Relatedly, personality pathology in adolescence remains controversial, and these results could be interpreted as suggesting that considering personality disorder in adolescents provides little information beyond what could already be known given syndromal assessment, since earlier models of internalizing and externalizing were based primarily on the covariance of non-personality syndromes. Thus, these results imply that researchers should continue to explore the validity and clinical utility of personality pathology assessment in adolescents.

Summary

Overall, these findings add to a growing literature highlighting how the internalizing and externalizing framework can provide a viable explanation for ostensible psychiatric

comorbidity and importantly extend this perspective to associations between personality pathology and clinical problems in adolescents. The internalizing and externalizing model of psychopathology has significant practical potential for economizing the clinical assessment of psychopathology in adolescents. This model may also help solve three important problems associated with existing psychiatric classification models: the tendency to split diagnoses in successive editions of the DSM, the applicability of personality pathology in adolescence, and the relationship between personality and psychopathology. As such, the internalizing and externalizing framework should be given serious consideration for representing adolescent psychopathology in DSM-V.

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References

1. Achenbach TM (1966) The classification of children's psychiatric symptoms: a factor analytic study. *Psychol Monogr* 80:37
2. Krueger RF (1999) The structure of common mental disorders. *Arch Gen Psychiatry* 56:921–926
3. Krueger RF, Hicks BM, Patrick CJ, Carlson SR, Iacono WG, McGue M (2002) Etiologic connections among substance dependence, antisocial behavior, and personality: modeling the externalizing spectrum. *J Abnorm Psychol* 111:411–424
4. Hopwood CJ, Baker KL, Morey LC (2008) Personality and drugs of choice. *Personal Ind Diff* 44: 1413–1421
5. Markon K, Krueger RF, Watson D (2005) Delineating the structure of normal and abnormal personality: an integrative hierarchical approach. *J Pers Soc Psychol* 88:139–157
6. Watson D (2005) Rethinking the mood and anxiety disorders: a quantitative hierarchical model for DSM-V. *J Abnorm Psychol* 114:522–536
7. Widiger TA, Clark LA (2000) Toward DSM-V and the classification of psychopathology. *Psychol Bull* 126:946–963
8. Becker DF, Grilo CM, Edell WS, McGlashan TH (2000) Comorbidity of borderline personality disorder with other personality disorders in hospitalized adolescents and adults. *Am J Psychiatry* 157:2011–2016
9. McGlashan TH, Grilo CM, Skodol AE, Gunderson JG, Shea MT, Morey LC, Zanarini MC, Stout RL (2000) The collaborative longitudinal personality disorders study: baseline Axis I/II and II/II diagnostic co-occurrence. *Acta Psychiatr Scand* 102:256–264
10. Grilo CM, Walker ML, Becker DF, Edell WS, McGlashan TH (1997) Personality disorders in adolescents with major depression, substance use disorders, and co-existing depression and substance use disorders. *J Consult Clin Psychol* 65:328–332
11. Paris J (2005) The development of impulsivity and suicidality in borderline personality disorder. *Dev Psychopathol* 17:1091–1104
12. Grilo CM, McGlashan TH, Quinlan DM, Walker ML, Greenfeld D, Edell WS (1998) Frequency of personality disorders in two age cohorts of psychiatric inpatients. *Am J Psychiatry* 155:140–142
13. Donnellan MB, Conger RD, Burzette RG (2007) Personality development from late adolescence to young adulthood: differential stability, normative maturity, and evidence for the maturity-stability hypothesis. *J Pers* 75:237–267
14. Crawford TN, Cohen P, Brook JS (2001) Dramatic-erratic personality disorder symptoms: II. Continuity from early adolescence to adulthood. *J Personal Disord* 15:319–335
15. Becker DF, Grilo CM, Morey LC, Walker ML, Edell WS, McGlashan TH (1999) Applicability of personality disorder criteria to hospitalized adolescents: evaluation of internal consistency and criterion overlap. *J Am Acad Child Adolesc Psychiatry* 38:200–205
16. Millon T, Millon C, Davis RD (1993) Millon Adolescent Clinical Inventory. National Computer Systems Assessments, Minneapolis
17. McCann JT (1999) Assessing adolescents with the MACI. Wiley, New York
18. Millon T, Davis RD (1993) The Millon Adolescent Personality Inventory and the Millon Adolescent Clinical Inventory. *J Couns Devel* 71:570–574

19. Pinto M, Grilo CM (2004) Reliability, diagnostic efficiency, and validity of the Millon adolescent clinical inventory: examination of selected scales in psychiatrically hospitalized adolescents. *Behav Res Ther* 42:1505–1519
20. Romm S, Bockian N, Harvey M (1999) Factor-based prototypes of the Millon Adolescent Clinical Inventory in adolescents referred for residential treatment. *J Personal Assess* 72:125–143
21. Beck AT, Steer RA (1987) Manual for the revised Beck Depression Inventory. Psychological Corporation, San Antonio
22. Grilo CM, Masheb RM, Wilson GT (2001) Subtyping binge eating disorder. *J Consult Clin Psychol* 69:1066–1072
23. Watson D, Clark LA (1984) Negative affectivity: the disposition to experience aversive emotional states. *Psychol Bull* 96:465–490
24. Strober M, Green J, Carlson G (1981) Utility of the Beck Depression Inventory with psychiatrically hospitalized adolescents. *J Consul Clin Psychol* 49:482–483
25. Mayer JE, Filstead WJ (1979) The Adolescent Alcohol Involvement Scale: an instrument for measuring adolescents' use and misuse of alcohol. *J Stud Alcohol* 40:291–300
26. Moberg DP (1983) Identifying adolescents with alcohol problems: a field test of the Adolescent Alcohol Involvement Scale. *J Stud Alcohol* 44:701–721
27. Martino S, Grilo CM, Fehon DC (2000) Development of the Drug Abuse Screening Test for Adolescents (DAST-A). *Addict Behav* 25:57–70
28. Skinner HA (1982) The drug abuse screening test. *Addict Behav* 7:363–371
29. Rosenberg M (1965) Society and the adolescent self-image. Princeton University Press, Princeton
30. Winters NC, Myers K, Proud L (2002) Ten-year review of rating scales, III: scales assessing suicidality, cognitive style, and self-esteem. *J Am Acad Child Adolesc Psychiatry* 41:1150–1181
31. Plutchik R, van Praag HM (1989) The measurement of suicidality, aggressivity and impulsivity. *Prog Neuropsychopharmacol Biol Psychiatry* 13:S23–S34
32. Greening L, Stoppelbein L, Fite P, Dhossche D, Erath S, Brown J, Cramer R, Young L (2008) Pathways to suicidal behaviors in childhood. *Suicide Life Threat Behav* 38:35–45
33. Grosz DE, Lipschitz DS, Eldar S, Finkelstein G, Blackwood N, Gerbino-Rosen G (1994) Correlates of violence risk in hospitalized adolescents. *Compr Psychiatry* 35:296–300
34. Plutchik R, van Praag HM (1990) A self-report measure of violence risk. *Compr Psychiatry* 31:450–456
35. Hopwood CJ, Morey LC, Gunderson JG, Shea MT, McGlashan TH, Skodol AE, Grilo CM (2006) Hierarchical relationships between borderline, schizotypal, avoidant and obsessive-compulsive personality disorders. *Acta Psychiatr Scand* 113:430–439